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SOLID WASTE
MANAGEMENT BUREAU
Division of Environmental Sciences
Montana State Department of Health
and Environmental Sciences

a bi-monthly publication

JULY 1978 Vol. VI No. 4

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Solid Waste Management Considers Environment

Garbage cans line the alleys of a town awaiting the truck to pick up the waste generated by the hundreds or thousands of families in a town. The contents are taken to the local dump or sanitary landfill. Many people think this is the extent of a town or state's "solid waste problem".

However, the passage of state and federal legislation regulating the disposal of solid waste is making more and more individuals and government officials aware of the complexities of managing solid waste properly. In addition to the concern for potential environmental degradation and threat to public health, there is the real possibility of citizen lawsuits arising from the dangerous effects of improperly located or managed landfills.

While this once was the problem of local governments only, it is now legally extended to industries and corporations which dispose of solid waste on their own property, specifically if such wastes are considered hazardous.

91 Million Tons of Waste
100,000 Tons of Hazardous Waste

Of the estimated 91 million tons of solid wastes generated in Montana during 1977, 600,000 was classified as municipal waste from residences and commercial establishments. The remainder were: wastewater treatment and industrial sludge, mining, forest product and feedlot wastes. These categories also included the majority of the estimated 100,000 tons of hazardous material discarded annually in Montana.

Estimated Amount of Solid Waste for Montana, 1977

Waste Type	Tons/Year
Municipal (residential, commercial)	600,000
Wastewater Treatment Sludge	12,000
Industrial Solid Waste	4,600,000(est.)
Mining Waste	72,000,000
Forest Product Waste	13,000,000
Feedlot Waste	803,000

In addition to new laws regarding waste disposal, the problem grows daily because of increasing population, industrial production and land values. More and more is being learned about the potential dangers to the environment and public health associated with improper disposal, particularly to groundwater. Finally, the amounts of hazardous wastes are increasing rapidly through the installation and operation of air emission control equipment and wastewater treatment procedures which produce fly ash, flue dusts, and various kinds of sludges.

AIR Pollution

Regulations which require that disposal sites be "sanitary landfills" are reducing some of the environmental pollution from open, burning dumps which were an obvious violation of the environment. Such dumps also present serious health hazards. For instance, when vinyl plastic is burned, it releases carcinogens into the atmosphere, and wind can pick up harmful dusts such as asbestos dust, which is known to cause cancer.

LAND Abuse

A poorly designed or operating dump can affect the surrounding land values. The fire from burning rubbish can spread to adjacent property, or blowing litter can blight the landscape for miles. Land productivity can be damaged through improperly disposed waste changing its biological and chemical nature or introducing pathogenic organisms.

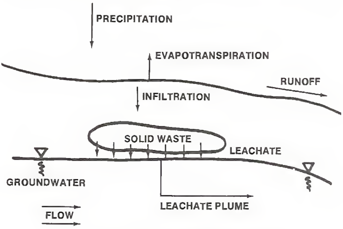
WATER Pollution

Water - both groundwater and surface water - can be contaminated through leachate and runoff. Even relatively insoluble solid wastes that are dumped on land can find their way into surface waters through natural runoff. However, of greater concern is the potential pollution of groundwater since 50 percent of the nation's population uses it for domestic use.

Leachate Contaminates Groundwater

The major perils inherent in groundwater contamination are the elusive nature and the long duration of the problem. Because the subsurface migration of pollutants is a very slow process, contamination may not be discovered for many years. And, once discovered it can be extremely costly to correct the groundwater pollution.

The production of leachate (contaminated water) in a landfill or dump is a complex process. It is formed when water percolating through solid waste picks up products of decomposition and other contaminants. The water necessary for leachate production comes from rainfall, liquid waste disposal at the site, moisture in the waste, water running onto the site from adjacent property, infiltration from irrigation above the site and from groundwater moving through the waste.



The process of leachate formation

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Initially, the solid waste acts as a sponge and simply absorbs the water. However, with the continued addition of water, the waste eventually reaches the limit of its moisture retaining capacity. At this point, any further water entering the waste will cause an equal volume of contaminated water (leachate) to leave the waste. What happens to it and how much reaches the groundwater depends on the type and amount of soil under the site, the operation of the site and the site's initial design and location.

Using proper site selection criteria and management, the potential of leachate production and eventual contamination can be greatly reduced.

Public Health Threatened

A direct public health problem is the improper disposal of toxic wastes, such as pesticides, and their containers which can poison or cause permanent damage to humans and animals. Less obvious is the problem of poisoning through the food chain. There are cases of people being poisoned after eating meat of animals which have fed on contaminated grain. The grain crops were poisoned by hazardous wastes which had been deposited on the land.

Industrial Solid Waste Surveyed

In preparation for managing the state and federal hazardous waste disposal regulations, the Solid Waste Management Bureau conducted a two-year survey of Montana's industries to determine the types of wastes generated and their methods of diposal. It also provided information on amounts and locations of waste generation.

Approximately 100,567 tons of potentially hazardous wastes are generated each year. Of the total, 16% are solids, 79% are sludges and 5% are liquids. The largest single class of such waste reported is the calcium hydroxide sludges produced in sugar refining and in the inorganic chemical industry.

By industrial classification, Sugar Refining is the largest producer of potentially hazardous wastes, followed by Industrial Inorganic Chemicals, Primary Metals and Petroleum Refining. The majority (96%) of all industrial wastes are retained by the producer for on-site disposal. Only 84 tons per year are reported as being disposed of at municipal sanitary landfills.

Although many industrial solid waste disposal sites appear to be well designed and operated, the survey also revealed numerous instances of haphazard or poorly planned disposal operations. Inadequate hazardous waste disposal operations will be phased out or upgraded over the next several years as the new laws are implemented.

Bureau Assisting Industries and Local Governments

The Solid Waste Management Bureau is working closely with municipal and private personnel to insure proper site selection, operation and management of new sanitary landfills in the state and proper upgrading of others. It's a job which will require every citizen's cooperation and understanding of its importance.

* * *

Bureau Seeks Public Comment

The Solid Waste Management Bureau has just completed a draft of its annual solid waste and hazardous waste demonstration grant work plan. The work plan is required by the U.S. Environmental Protection Agency (E.P.A.) regional office for the state to receive its annual demonstration grant.

In the coming year, the Solid Waste Management Bureau plans on continuing the present solid waste programs. These efforts include area-wide planning grants, licensing of solid waste disposal sites, routine inspection/enforcement activities, administration of the statewide junk vehicle program, and providing technical assistance in such areas as disposal site selection, solid waste district formation and landfill operator training. In the area of hazardous wastes, the bureau plans to develop its program capabilities in order to seek authorization from E.P.A. to regulate hazardous waste management in Montana. The bureau also will be completing a waste pesticide management project which will include the shipment of a stockpile of stored excess pesticide chemicals to a commercial disposal facility outside of the state.

The Bureau regards the involvement of the public as critical in the formation of direction and work tasks for the upcoming year.

According to Duane Robertson, Bureau Chief, "We are actively seeking the advice and recommendations of all persons and organizations that may be affected by solid waste management. This is the only way we can be assured that our efforts are truly responsive to the citizens' needs."

For further information on the draft work plan, write to the Solid Waste Management Bureau, Montana Department of Health and Environmental Sciences, Cogswell Building, Helena, Montana 59601.

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